

Borehole

51-08-05

Log Event A

Borehole Information

Farm : <u>TX</u>	Tank : <u>TX-108</u>	Site Number : <u>299-W15-136</u>
N-Coord : <u>41.718</u>	W-Coord : <u>76.022</u>	TOC Elevation : <u>670.04</u>
Water Level, ft :	Date Drilled : <u>11/30/1971</u>	

Casing Record

Type : <u>Steel-welded</u>	Thickness : <u>0.280</u>	ID, in. : <u>6</u>
Top Depth, ft. : <u>0</u>	Bottom Depth, ft. : <u>100</u>	

Borehole Notes:

This borehole was completed to 100 ft in November 1971. Though not specified in the driller's notes, 6-in. casing was apparently installed in the borehole. There is no indication that the casing was perforated. The driller's notes do not indicate that grout was injected into any portion of the borehole.

The casing thickness is presumed to be 0.280 in., on the basis of published thickness for schedule-40, 6-in. steel tubing.

The top of the casing is the starting depth for the logs. The casing collar is about 0.5 ft above the ground surface; the casing lip is enclosed in a 2.5-ft-diameter concrete collar.

Equipment Information

Logging System : <u>1</u>	Detector Type : <u>HPGe</u>	Detector Efficiency: <u>35.0 %</u>
Calibration Date : <u>11/1995</u>	Calibration Reference : <u>GJPO-HAN-3</u>	Logging Procedure : <u>P-GJPO-1783</u>

Log Run Information

Log Run Number : <u>1</u>	Log Run Date : <u>2/7/1996</u>	Logging Engineer: <u>Bob Spatz</u>
Start Depth, ft.: <u>0.0</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>22.0</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>

Log Run Number : <u>2</u>	Log Run Date : <u>2/8/1996</u>	Logging Engineer: <u>Bob Spatz</u>
Start Depth, ft.: <u>97.5</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>21.0</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>



Spectral Gamma-Ray Borehole
Log Data Report

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Borehole

51-08-05

Log Event A

Analysis Information

Analyst : H.D. Mac Lean

Data Processing Reference : P-GJPO-1787

Analysis Date : 11/22/1996

Analysis Notes :

This borehole was logged with the SGLS in two logging runs. The pre- and post-survey field verification spectra for both logging runs were in conformance with the acceptance criteria established for the peak shape and system efficiency, indicating that the logging system was operating within prescribed specifications. The gain remained stable throughout the data collection activity; it was not necessary to apply corrections for gain drift during data processing in order to maintain proper peak identification. The energy calibration and peak-shape calibration from verification spectra that successfully met the established acceptance criteria were used to establish the channel-to-energy parameters used in processing the spectra acquired during the logging operation. Casing correction factors for a 0.280-in.-thick steel casing were applied during analysis.

A depth overlap, where data were collected at the same depths during separate logging runs, occurred between depths of 21 and 22 ft. The Cs-137 and KUT concentrations were within the statistical uncertainty of the measurements, indicating very good repeatability of the measurements.

The only man-made radionuclide encountered during was Cs-137. Detectable Cs-137 concentrations were measured almost continuously from the ground surface to about 14 ft, at 17.5 ft, between 20.5 and 21 ft, between 45 and 47 ft, and at 90.5 ft. Identifiable peaks of higher Cs-137 concentrations were detected within the near-surface contaminated zone between 1 and 5 ft and between 9 and 11 ft. The maximum measured Cs-137 concentration of 11 pCi/g was detected at 1.5 ft. A peak concentration of 3 pCi/g was measured between 9 and 11 ft; a peak concentration of 3 pCi/g was measured between 45 and 47 ft. The measured Cs-137 concentrations at the remaining locations were just above the MDL at about 0.2 pCi/g.

A step-like increase in the K-40 concentration and in the total gamma-ray count rate occurs at a depth of 50 ft. Measured concentrations are about 12 pCi/g at 50 ft and about 18 pCi/g below this depth.

Additional information and interpretations of log data are included in the main body of the Tank Summary Data Report for tank TX-108.

Log Plot Notes:

Separate log plots show the concentrations of the man-made radionuclide (Cs-137) and the naturally occurring radionuclides (KUT). The natural radionuclides can be used for lithology interpretations. The headings of the plots identify the specific gamma rays used to calculate the concentrations.

Uncertainty bars on the plots show the statistical uncertainties for the measurements as 95-percent confidence intervals. Open circles on the plots give the MDL. The MDL of a radionuclide represents the lowest concentration at which positive identification of a gamma-ray peak is statistically defensible.

A combination plot includes the man-made and natural radionuclides, in addition to the total gamma derived from the spectral data and the Tank Farms gross gamma log. The gross gamma plot displays the latest available digital data. No attempt has been made to adjust the depths of the gross gamma logs to coincide with the SGLS data. The MDL and the uncertainty bars have been removed from these plots.